

## CLAIMS:

1. A method of organ augmentation comprising the steps of:  
transfecting a population of cells with a plasmid encoding an angiogenesis modulating agent; and  
implanting the transfected cells into a target tissue region where the cells will express the angiogenesis modulating agent thereby inducing assimilation and differentiation of cells in the target region.
2. The method of claim 1, wherein the step of transfecting the cells further comprises transiently transfecting the cells, such that the angiogenesis modulating agent is produced for less than three weeks.
3. The method of claim 1, wherein the population of cells comprises undifferentiated cells.
4. The method of claim 1, wherein the population of cells comprises vascular endothelial cells (EC).
5. The method of claim 1, wherein the method further comprises co-administering a second population of cells.
6. The method of claim 5, wherein the second population of cells comprises undifferentiated cells.
7. The method of claim 5, wherein the second population of cells comprises vascular endothelial cells (EC).
8. The method of claim 1, wherein the method further comprises the step of suspending the transfected cells in a pharmaceutically acceptable carrier.

9. The method of claim 8, wherein the pharmaceutically acceptable carrier comprises collagen.
10. The method of claim 8, wherein the pharmaceutically acceptable carrier comprises a polymer matrix.
11. The method of claim 1, wherein the step of transfecting cells further comprises selecting stably transfected cells.
12. The method of claim 1, wherein the population of cells comprises myoblasts.
13. The method of claim 1, wherein the angiogenesis modulating agent is VEGF.
14. A method of promoting tissue formation in a subject comprising the steps of:
  - isolating cells suitable for growth of an organ construct;
  - transfecting cells with a plasmid encoding an angiogenesis modulating agent;
  - seeding the transfecting cells onto a biomatrix;
  - implanting the biomatrix at a site in need of tissue formation, such that the angiogenesis modulating agent producing cells differentiate into tissue and produce the growth factor;
  - whereby the transfected cells assist in formation and repair of tissue.
15. The method of claim 14, wherein the step of transfecting cells further comprises transient transfection.
16. The method of claim 14, wherein the step of transfecting cells further comprises selecting stably transfected cells.
17. The method of claim 14, wherein the method further comprises screening transfected cells for expression of an appropriate isolate, such that the angiogenesis modulating agent is being produced in high yield.
18. The method of claim 14, wherein the step of isolating cells further comprises the steps

of isolating cells from a subject and culturing the cells *in vitro*.

19. The method of claim 14, wherein the method further comprises producing the angiogenesis modulating agent *in vivo* for less than three weeks.
20. The method of claim 14, wherein the cells comprise myoblasts.
21. The method of claim 14, wherein the angiogenesis modulating agent is VEGF.
22. The method of claim 14, wherein the tissue is muscle tissue.
23. A method for augmenting organ function comprising:
  - culturing at least one population of cells on a matrix material to produce an organ construct capable of differentiating *in vivo* to replace or augment organ function;
  - transfecting a second population of cells with a plasmid encoding an angiogenesis modulating agent; and
  - implanting the organ construct and the transfected cells *in vivo* at a target site.
24. The method of claim 23, wherein the matrix is decellularized tissue.
25. The method of claim 23, wherein the matrix is a hydrogel.
26. The method of claim 23, wherein the matrix is a polymer.
27. The method of claim 23, wherein the cells are myoblasts.
28. The method of claim 23, wherein the angiogenesis modulating agent is VEGF.
29. The method of claim 23, wherein the method further comprises assimilating the transfected cells into the tissue layer.

30. A method of tissue repair comprising the steps of:
- transfecting a population of cells with a plasmid encoding an angiogenesis modulating agent;
  - encapsulating the transfected cells; and
  - implanting the suspended transfected cells into a target tissue region wherein the cells will express the angiogenesis modulating agent thereby enhancing angiogenesis in the target tissue.
31. The method of claim 30, wherein the step of encapsulating the transfected cells further comprises using alginate-PLL capsules.
32. The method of claim 30, wherein the method further comprises co-implanting a three dimensional biomatrix of cultured cells at the target site, such that a tissue layer of the three dimensional biomatrix differentiates to provide a new tissue.